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SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE • NOVEMBER 7, 1942

To Be Prevented

See Page 298

A SCIENCE SERVICE PUBLICATION

Do You Know?

Quinine was first discovered in the Americas 300 years ago, in the bitter bark of cinchona tree of the Andes.

Phosphorescent paint applied to the walls of a darkened blackout room can provide enough glow to guide a person's movements.

The *South Pacific* is so large that it could easily hold within its shores the South Atlantic, plus the continents of Africa and South America.

A *submarine* takes in water to dive, blows it out again to rise, just as a fish regulates the gas content of its "swim bladder" for the same purpose.

Woods that burn well while still green include beech, Douglas fir, red and white spruces, tamarack, lodgepole and red pines, black locust, and ashes (except black ash).

The *Sam Browne belt,* with its shoulder strap for carrying equipment, was invented by British General Browne after he had lost an arm in the Indian Mutiny of '57.

One way to protect *potatoes* against infection and rotting is to postpone digging until the vines are dead, and until the blight spores on the old tops and on on the ground are dead.

The name *Blimp* comes from British experiments with lighter-than-air craft during the last war, when their first non-rigid model, called "A-limp," proved less satisfactory than the second, or "B-limp."

Question Box

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SAFETY

What hazard results when city dwellers go to work on farms? p. 303.

Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

When *plants* give off quantities of water through their leaves, they avoid sunburn.

Normally America is the world's largest consumer of *tin,* using half the world's supply in 1941.

Thousands of ducks and geese die each year throughout the United States from lead poisoning acquired by eating *lead shot.*

Mexico is now supplying the *vanilla* which we used to import from Madagascar.

The *American eagle* has adapted itself to the treeless Aleutians by building its nest on the ground.

The army has found that *cotton* is one of the warmest materials for Arctic wear, providing insulation and wind and water resistance.

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MEDICINE

26 Types of Germs

All the members of the group A streptococci family have been isolated from patients with scarlet fever. Most important factor in epidemic is number of carriers.

➤ MOST IMPORTANT factor in the making of a scarlet fever epidemic in any community is the condition of the environment and specifically the number of persons in the community carrying scarlet fever germs, Dr. Francis F. Schwentker and Dr. John H. Janney, of the Rockefeller Foundation, New York, declared at the meeting of the American Public Health Association in St. Louis.

Over the world all of the 26 serological types of germs belonging to the group A streptococci family have been isolated from patients with scarlet fever. In any single community, however, the sporadic cases are due to only a few types and epidemic cases to only one type, the scientists reported.

Strains capable of causing scarlet fever, called scarlatinogenic, are present sometimes in communities free from the disease, which raises the question, what causes an epidemic to start? The New York scientists answer the question as follows:

"For scarlet fever to occur in a community, a scarlatinogenic strain of streptococcus must be present or introduced. The number of cases of infection which follow depends on the distribution factor as measured by the carrier rate. Low carrier rates mean only sporadic cases; high rates accompany epidemics.

"A part of the population are never reached by the streptococcus. These naturally remain well. Of the others who become infected, some have antibacterial immunity; they either eliminate the organism immediately or become healthy carriers.

"Those without antibacterial immunity become ill; the kind of illness is determined by the antitoxic immunity. If immune, the patient develops streptococcic tonsillitis; if not, scarlet fever. Other diseases such as erysipelas and puerperal fever may result with portals of entry other than the throat."

Science News Letter, November 7, 1942

Venereal Disease Cause

➤ A PROBABLE new germ cause for a venereal disease with symptoms like those of gonorrhea was reported by Dr. Charles M. Carpenter of the University of Rochester School of Medicine and Dentistry.

In three out of 505 patients examined for evidence of gonorrhea the microorganism, *Neisseria flava,* was isolated but no gonococci (*Neisseria gonorrhoeae*) could be found, though the patients had symptoms similar to those caused by the gonococci.

Neisseria flava has not previously been classed as a disease-producing organism and is considered a part of the normal germ life of the nose and throat. Its presence in the part of the body generally affected by the gonococcus, Dr. Carpenter pointed out, "raises some interesting questions as to the source of the organism and its ability to produce disease."

Science News Letter, November 7, 1942

Predicts Decrease

➤ A DECREASE to one-twelfth the present number of typhoid fever carriers and consequent decrease in cases of this sickness by 1982 was predicted by Dr. Wendell R. Ames and Morton Robins, of the New York State Department of Health.

Their figures relate to New York State specifically but presumably are fairly characteristic of the nation as a whole. The typhoid picture, as their study shows it, is one in which water and milk supplies are becoming less important and healthy carriers of typhoid fever germs more important in the spread of this disease.

Typhoid patients over 30 years of age, they discovered from study of 3,750 cases in New York between 1930 and 1940, became chronic carriers nine times as frequently as did younger patients. Females became carriers nearly twice as often as did males.

Because of the advanced age of the carriers produced, however, the natural forces of mortality will tend to reduce this number rapidly. On this basis they estimated carrier prevalence in New York State, exclusive of New York City, to be on Jan. 1, 1940, approximately 2,500 carriers or 42 per 10,000 population. In 40 years they estimate the number of carriers will decrease to about 200.

Science News Letter, November 7, 1942

Fatal Attacks Rare

➤ FIGURES showing that even in severe epidemics poliomyelitis (infantile paralysis) rarely kills and rarely cripples its victims severely were announced by Dr. Morton Kramer, Dr. John A. Toomey, Dr. Harold J. Knapp and Dr. James Doull, of Cleveland.

The figures came from records at the time Cuyahoga County and Cleveland experienced their worst epidemic of polio and from examinations of the survivors four to six months after the attack. In this epidemic in 1941 polio cases ran about twice as high in Cleveland and Cuyahoga County as in the rest of Ohio and the entire United States.

"In the age group most affected by the disease (under 10 years of age) the chance of attack in which the sequel would be minimal or no paralysis was 1 in 2,600; moderate paralysis, 1 in 6,500; severe paralysis, 1 in 30,000; and death, 1 in 18,800," the doctors stated. "For those in the age group 20 years and over, they were for minimal or no paralysis, 1 in 173,300; moderate paralysis, 1 in 123,000; severe paralysis, 1 in 173,300; and death, 1 in 288,300. It should be realized that these probabilities are approximate only and will vary somewhat from epidemic to epidemic."

Science News Letter, November 7, 1942

DEPTH CHARGE — This is what happens when an American depth charge is dropped on an Axis submarine. It is an official U. S. Navy photograph.

AERONAUTICS

Langley Dispute Ends

Long controversy between Smithsonian Institution and Wrights over whether Dr. Langley's machine might have flown is settled by new statement.

➤ THE LONG DISPUTE over the "flyability" of the Langley flying machine, which has divided aviators and aeronautical engineers into two disputing camps for nearly 40 years, has finally been definitely settled, by open acknowledgment on the part of Smithsonian authorities that this early airplane could not have been successfully flown as it was built in 1903. A full statement to this effect has been issued by Dr. Charles G. Abbot, secretary of the Institution, which has been accepted as satisfactory by Dr. Orville Wright, surviving member of the famous pair of brothers who made the first successful powered flights at Kitty Hawk, N. C., in the same year that saw the Langley machine's tragic unsuccess.

The story of the celebrated dispute may be briefly summarized: After successful tests of models in 1896 and 1903, Dr. Samuel P. Langley, then secretary of the Smithsonian Institution, built a full-sized, engine-powered machine. In two launching attempts, during October and December, 1903, this machine was wrecked without getting into the air. Many persons blamed the failure on faulty launching apparatus and claimed that the plane, or "aerodrome" as it was then called, would have flown had it become air-borne.

In 1914, incident to a patent suit between the Wright brothers and Glenn Curtiss, the Langley plane was taken from the National Museum, reconditioned and given a new engine. It made a number of takeoffs from the surface of Lake Keuka, N. Y., but did not make a sustained flight.

Supporters of the Wright claims pointed out some 35 changes in construction that were made in the course of reconditioning, and declared that without these the Langley machine could not have flown at all. So strongly did Dr. Orville Wright feel about this, and about claims subsequently made on the label of the Langley machine when it was placed in the National Museum, that he refused to permit the original Wright machine to be shown with it, and instead sent it to a museum in England in 1928.

In this status the problem and the attendant controversy were inherited by Dr. Abbot when he became secretary of the Smithsonian Institution. Now, after painstaking investigations, he acknowledges the validity of the Wright claims.

Full text of Dr. Abbot's statement follows:

"Since I became Secretary in 1928 I have made many efforts to compose the Smithsonian-Wright controversy, which I inherited. I will now, speaking for the Smithsonian Institution, make the following statement in an attempt to correct as far as possible acts and assertions of former Smithsonian officials that may have been misleading, or are held to be detrimental to the Wrights.

"I sincerely regret that the Institution employed to make the tests of 1914 an agent who had been an unsuccessful defendant in patent litigation brought against him by the Wrights.

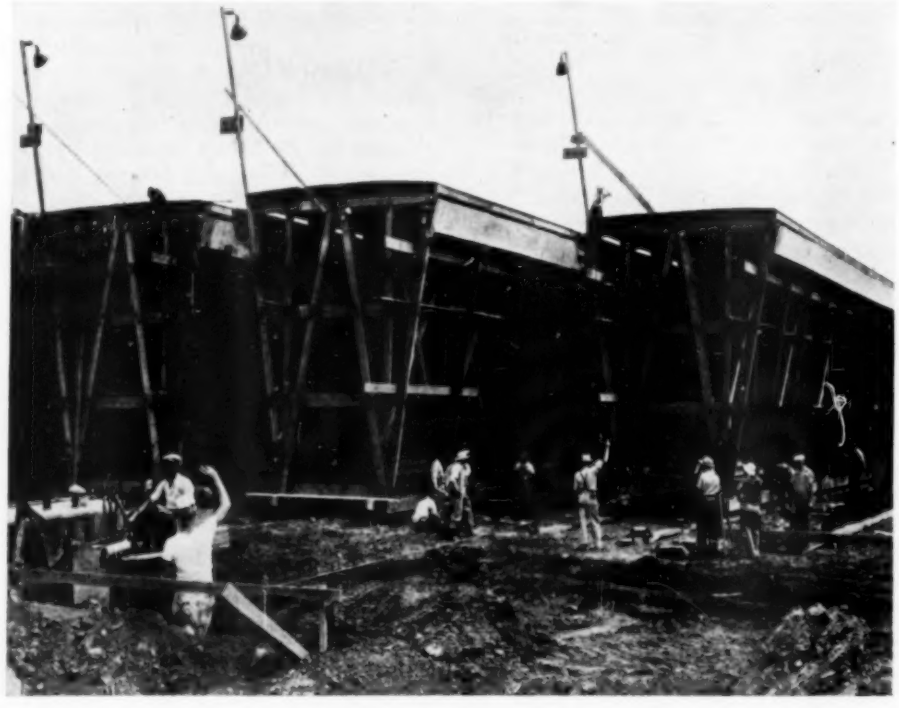
"I sincerely regret that statements were repeatedly made by officers of the Institution that the Langley machine was flown in 1914 with certain changes of the machine necessary to use pontoons, without mentioning the other changes mentioned in Dr. Wright's list.

"I point out that Assistant Secretary Rathbun was misinformed when he stated that the Langley machine 'without modification' made 'successful flights.'

"I sincerely regret the public statement by officers of the Institution that 'the tests of 1914 showed that the late Secretary Langley had succeeded in building the first aeroplane capable of sustained free flight with a man.'"

The publication of this report, already accepted by Dr. Wright, should clear the way, Dr. Abbot hopes, for the return of the original Kitty Hawk plane to the United States and its exhibition in the U. S. National Museum.

Science News Letter, November 7, 1942



ROOF FIRST—To speed construction of the Wright Aeronautical Corporation's new engine plant, and to avoid the use of steel, the concrete roof was first poured atop these platforms and at the same time into wooden forms to shape the supporting columns. When the concrete had hardened, the platforms were pulled out from under the roof and another 114-foot section poured. And so on.

FACTORY FINISHED—The walls of this built-from-the-top factory, and the concrete floors laid directly on the ground without steel reinforcing, are now finished. Machinery has been moved into the first section, and production is booming, while the other sections are being constructed.

MEDICINE

Disease Cause Found

A rod-shaped bacterium is discovered in large numbers in the low-grade dusty cotton handled by workers who developed illness like mill fever.

➤ AN ACUTE ILLNESS affecting hundreds of workers in cotton mills, rural mattress-making centers, upholstering plants and cottonseed processing plants throughout 27 States and 2 Canadian Provinces is caused by a poison produced by a germ in the cotton. Experiments showing this, including use of human volunteers who inhaled the germy cotton dust and caught the identical disease, were reported by Roy Schneiter, Dr. Paul A. Neal and Miss Barbara H. Caminita, of the U. S. National Institute of Health, at the meeting of the American Public Health Association in St. Louis.

The illness occurred among workers handling a very low grade of dusty, stained cotton. It started suddenly, within one to six hours after exposure to cotton dust containing the germs, and the acute phase lasted 24 to 72 hours. Principal symptoms were irritation of the eyelids, pain under the breast-bone, dryness of the throat, generalized aches, fatigue, headache, cough, chills, fever, loss of appetite, nausea and vomiting.

Samples of cotton incriminated in outbreaks of the illness contained no poison gases, no insecticides, no chemically extractable substance and no fungi to which the illness could be attributed. A rod-shaped bacterium, however, was found in large numbers in the incriminated cotton, but not in high-grade cotton or in the soil in which some of the cotton had grown.

"The same type of disabling illness," the Federal health workers reported, "could be produced in humans by inhalation of (a) dust from normal cotton contaminated with this 'cotton bacterium' and its culture filtrates, (b) dust from stained cotton containing a high incidence of the 'cotton bacterium' and (c) a fine mist of a sterile filtrate from cultures of this microorganism. The severity of symptoms and physical findings are dependent upon the presence and concentration of the 'cotton bacterium' or its products in the cotton dust inhaled, and upon the duration of exposure.

"This acute illness, except for its greater severity, closely resembles mill fever, Monday fever and gin fever in cotton mill workers, heckling fever, grain fever, and hemp fever reported in workers inhaling flax, jute, grain and hemp dust respectively. Typical cultures of this microorganism have been isolated from hemp and grain dust. Further studies on this problem are being undertaken in cooperation with the U. S. Department of Agriculture."

Science News Letter, November 7, 1942

Short Shift for Mothers

➤ "ASSEMBLY LINES and clothes lines don't mix," Dr. James G. Townsend, U. S. Public Health Service officer in charge of the division of industrial hygiene of the National Institute of Health, declared in pointing out the health hazard of fatigue to women war workers who go home to cook, clean and wash for the family after eight hours on the assembly line.

Remedy suggested by Dr. Townsend is a shorter working shift for these women if they cannot find housekeepers or nurseries to give full care to their children.

A working week of six eight-hour days followed by one day of rest for the workers, and three shifts a day, are advised by Dr. Townsend in general as best working hours for avoiding the fatigue that impairs both health and output of the workers. Shifts should not be changed oftener than every two or three months, to allow ample time for the workers to get used to the new shift each time.

Night work is not harmful, he said, although there seem to be some who cannot or will not adjust to it.

War has brought improvements in plant ventilation and lighting but has increased industrial health hazards because of changes in industrial processes. Instead of using steel shot for sandblasting, sand is now being used, which brings the danger of silicosis to workers exposed to the sand. Toluene, widely used as a solvent, is now needed for TNT, so some plants have turned to benzene, which is much more dangerous to those working with it. A pimply condition of the face with little black centers in the pimples is due, the federal health service discovered, to the use of chlorinated hydrocarbons put into cutting oils to thicken them for use in heavy grinding.

Skin ailments account for two-thirds of absenteeism due to industrial conditions.

Science News Letter, November 7, 1942

NUTRITION

Britain Better Fed

Wealthy people are eating less, but the poor are getting richer diets since war rationing than they did before the war. Child health is better.

➤ COMFORT for Americans disturbed by the prospect of one cup of sugarless coffee per day, at least one meatless day per week and probable restrictions in butter and in variety of vegetables, appeared in the report of Sir John Boyd Orr, director of Great Britain's Imperial Bureau of Nutrition, to the American Public Health Association.

Britain in the fourth year of war is down to something like iron rations, with all luxury foods cut out, but the diet of the people in Britain from the viewpoint of health is about as good as it was before the war, Sir John declared. There are no signs of malnutrition, and child health is actually better than before the war.

Wealthy people are eating about one-third less food than before the war, while the poor are getting diets much richer in vitamins and minerals. Drastic changes in the national diet have been brought about, Sir John said, with almost complete absence of grumbling. There is no food hoarding; it is definitely not the thing to do, according to universal public opinion in England.

Britain has won the war on the food front partly through lend-lease shipments of food from America, for which Sir John expressed heartfelt gratitude to the United States and Canada, and partly through greatly increased production of food and milk at home. The amount of land under the plow in Britain now is 50% greater, representing an increase of six million acres, than it was before the war, when two-thirds of England's food was imported. There appears to be no farm labor man-power problem in Britain. Men, women and children, Sir John said, all work in their gardens and allotments after they have finished their day's work in factories, offices and schools.

England intends to win the peace on the food front by keeping home production up to a two-thirds increase. Sir John warned that America will have to increase her food production greatly for the job she and the British commonwealth of nations must do to avoid post-war defeat on the food front.

Science News Letter, November 7, 1942

NUTRITION

German Nutrition Fair

Although some foods are scarce, the total calories consumed by each person is much higher than during the World War. Even meat is more plentiful.

➤ GERMANY WILL NOT face the food difficulties this winter, in all probability, that she did during the later years of the first world war, predicts Helen C. Farnsworth of the Food Research Institute of Stanford University in a report on *Wartime Food Developments in Germany*.

Even recent heavy air raids will not appreciably affect the food situation, she believes, although a severe breakdown in transportation might bring about such a result.

Food reserves in the Reich are reported as still sizable, though lower than last year.

In contrast to the last war, Germany's farm-production and marketing system is much more efficiently operated. But labor shortage, especially since the Russian campaign, has become an increasingly acute problem. The most recent information reported that 800,000 war prisoners had been put to work. Nearly 2,000,000 foreigners, in all, are now thought to be working on German farms. Despite the much tighter labor-supply situation, there seems to be no indication of the extreme labor shortage that was evident in 1916, Miss Farnsworth reports.

Principal nutritional aims of the Nazis are to maintain high production of bread grains and sugar beets, and expand production of oil-bearing plants, vegetables, potatoes and fodder crops.

Production of rapeseed, the chief oil-bearing crop, for example, has been more than tripled during the past three years.

Although there has been a continued deterioration in the food situation in Germany, compared with the 1916-18 period, the fat and oil rations are three to four times as great, sugar rations double, and even meat allowances are somewhat higher than those of World War I.

But some meat preparations, like pork sausage, are no longer made wholly or even predominately of meat. Sausages are now made of a small amount of pork mixed with a large quantity of soybean meal and sometimes cereals. However, the high-protein soybeans are nearly a complete substitute for meat, many nutritionists have pointed out, so this is not as bad as it may seem.

"War bread" is another example of the Nazi food-stretching policy. Besides whole wheat flour, bread also contains rye, and barley has recently been added.

Nazis have had to take up their belts a good many notches, Miss Farnsworth indicates, but reduction of total calories consumed per capita seems to be small compared with their restricted diet during the last war.

"The strict food-rationing system with its special allowances for heavy workers, the establishment of government-sponsored industrial canteens, and the governmental price-stabilization program which has prevented prices of the scarcer 'protective' foods from advancing to levels at which only the rich could buy, have all contributed toward proper feeding of the German civilian population," Miss Farnsworth declares.

"In addition, the distribution of vitamin C tablets to urban children and expectant mothers, the required fortification of margarine with vitamin A, the governmental milk program for children, and sponsorship of ersatz products made from soybeans and/or other protein-rich and vitamin-rich foods have probably gone far to prevent malnutrition among German civilian consumers," she concludes.

Investigations have determined the specially balanced meals for the armed forces which are adapted to the various conditions of army operations.

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PHYSICS

Law May Be Universal

Gravitational law is still on trial but winning out, 299 years after birth of Newton. Distribution of galaxies obeys law. Theory of expanding universe questioned.

➤ IN THIS 299th year since the birth of Sir Isaac Newton on Christmas day, 1642, according to the Old Style Calendar then in use in England, his law of gravitation is still on trial but winning, according to Dr. Fritz Zwicky, professor of theoretical physics at the California Institute of Technology, in a report to the Astronomical Society of the Pacific.

The question is not whether the precise form of the law is Newton's or Einstein's, but the extent of its application whatever its form. Newton believed his law to be universal. "Every particle of matter in the universe attracts every other particle . . ." was Newton's formulation.

But it was a small universe in Newton's time. The extension of the force of gravity to the moon, and its action in producing the tides, were demonstrated by Newton himself. Its application to the planets and their satellites was readily verified in his time. Its application to comets was firmly established by the return of Halley's comet as predicted, 77 years after the calculations were made.

But all this concerns only our immediate solar system, a small speck in a vast universe of stars. Do the stars also obey this law? To answer this question took more time. Double stars revolve about each other but often require many years to complete a revolution, and are so far distant that the changes of position as seen in the telescope are of microscopic dimensions. It was not until 1830, more than a century and a half after the publication of Newton's law, that the astronomer, Savary, was able to show that the motions of these bodies are elliptical and the law of gravitation therefore applies.

But these stars belong to our own galactic or milky way system, a huge conglomeration of stars, clusters and gaseous bodies, 100,000 light years in diameter and about 20,000 light years thick at the center. It is only one among billions of others like it scattered about in a great universe of galaxies that extends at least 100,000,000 light years in every direction. Do the same laws apply in these distant galaxies or spiral nebulae?

This is a much harder question to answer than any of the others, and the answer cannot yet be regarded as complete. We believe that our own nebula or galaxy is revolving, but it takes 200,000 years to make one turn. Motions have been observed in our neighboring galaxy, Andromeda, only 870,000 light years away, which might be part of such a revolution, but it is too early to say.

Strangely enough, Dr. Zwicky finds the best evidence for the operation of gravity over inter-galactic distances, measured in millions of light years instead of millions of miles as in our solar system, in certain clusters of nebulae that occur. Imagine, a cluster of a universes each one like our great milky way! One of these in the constellation of Coma is 45,000,000 light years distant and about 5,000,000 light years in diameter. It contains, Dr. Zwicky estimates, over 2,000 galaxies; 650 have been counted.

The distribution of these galaxies within the sphere they occupy can be calculated on the basis of Newton's law of gravitation, and Dr. Zwicky finds that the actual distribution corresponds very nearly with that predicted by the law.

Incidentally, Dr. Zwicky says that these clusters of nebulae could not have settled down to their present state in the short time of less than 10,000,000,000 years allowed by the advocates of the expanding universe. Besides supporting the general validity of Newton's law of gravitation, he says they also suggest that the universe is not expanding.

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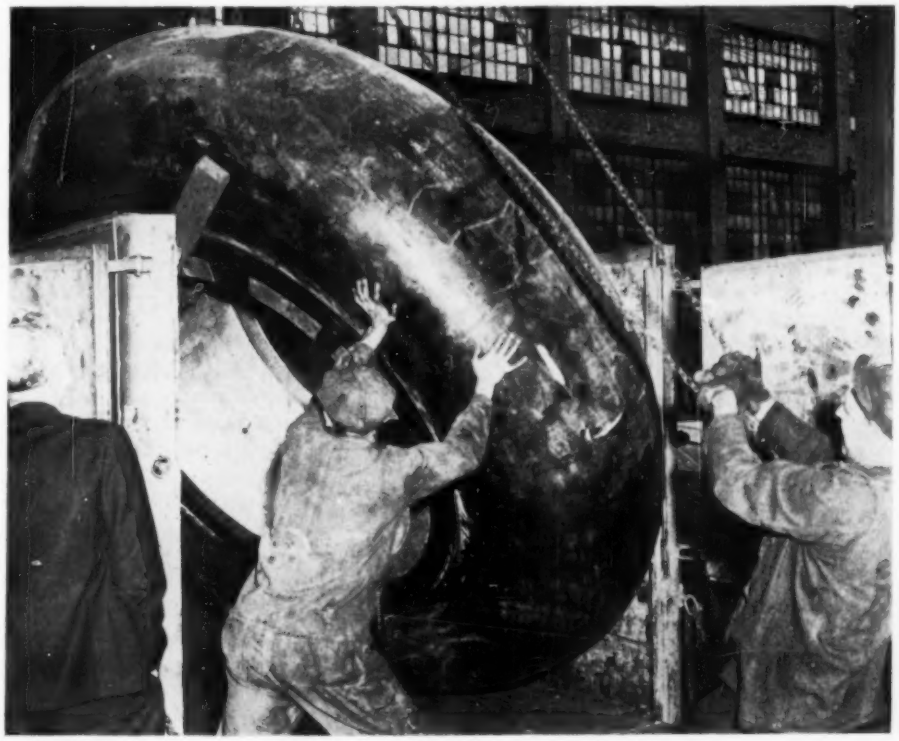

***WORLD'S LARGEST**—Remember when the huge tires were made for Admiral Richard E. Byrd's Antarctica "Snow-Cruiser"? Well this one of the set of six, which was on display for more than a year at the Chicago Museum of Science and Industry, has now been returned to the Goodyear Tire and Rubber Company to be made into about 120 retreads for the tires of war workers. The other five are still in Antarctica. This one is 10 feet in diameter and weighs between 1200 and 1300 pounds with its rim.*

BACTERIOLOGY

Bacteria and Fungi Feed on Pure Rubber

➤ BACTERIA and fungi with superbillygoat appetites are reported by Dr. Claude E. ZoBell of the Scripps Institution of Oceanography and Dr. Carroll W. Grant of Brooklyn College: they feed on pure rubber (*Science*, Oct. 23).

Drs. ZoBell and Grant first suspected microörganisms of this "rubberophagy" when rubber-stoppered bottles containing unsterilized sea water proved to have less oxygen in them than they should have. They then added cultures of sea bacteria to carefully sterilized water containing known quantities of chopped-up rubber, and again found evidence of bacterial hunger for this unlikely food.

Suspecting that it was the vulcanizing sulfur rather than the rubber itself that the bacteria were after, they repeated the experiment, this time using pure, unvulcanized, sulfur-free rubber. Once more came the indications of microbes at meals.

Not only bacteria but certain mold fungi have been found to be rubber-devourers. Garden soil as well as sea water have been found to harbor these hungry lower plants. Drs. ZoBell and Grant suggest that "such microörganisms may play an important role in the deterioration of rubber products. The life of rubber products which come in contact with moisture may be prolonged if ways can be found to retard or prevent the activity of rubber-oxidizing microörganisms."

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PUBLIC HEALTH

Waterproof Bags Designed For Wastes in Air Raids

➤ A NEW METHOD of protecting health in case of air raids was presented by the Office of Civilian Defense at the meeting of the American Public Health Association in St. Louis. It relates to the little-discussed and unpleasant but highly important matter of sewage disposal.

The prompt removal of waste products is vital to the healthy existence of a densely populated community, the OCD points out, but when water service is interrupted by damage to water mains, water-carried waste disposal becomes impossible. In most cases it will not be practical to cart sufficient water to flush toilets and continue water-carried waste disposal.

The OCD's answer to this vital problem is a single-use container made of specially treated water-resistant paper. This bag, unsupported, is capable of holding one quart of water for over 10 days with no water stains showing on the outside. No special container or frame is necessary for support of the bag while it is being used. Disposal involves no special problem, as after use the top of the bag can be rolled down and tied into a small compact package with twine ready attached. The bag and contents may be incinerated or, in private homes, deposited in the garbage can for collection. Further advantage of this container is that it does not call for critical materials such as galvanized iron or other metal.

The city of Washington, D. C., has ordered 60,000 of these bags. Sanitary engineers from other cities attending this meeting are showing great interest in the device, as did the local manager of a large hotel chain. The design was worked out by engineers of the District of Columbia Health Department, the U. S. Public Health Service and a Milwaukee paper manufacturer. Cost of the containers on the pilot run is estimated at eight cents each, with a reduction to five cents likely after large-scale production starts.

Science News Letter, November 7, 1942

ENTOMOLOGY

Share Tent With Mosquitoes To Aid Scientific Search

➤ A CHRISTMAS present for the men in the armed forces is being readied by six men in Canberra. Sharing their tent with a swarm of mosquitoes, they "keep 'em flying" to test repellents which members of the Scientific and Industrial Research Council hope to have perfected by the holidays.

Then the wet season in New Guinea will be at hand, and Allied Enemy No. 2, the deadly malaria-carrying mosquito, must be combated by the troops.

To date, oil from a Tasmanian tree is one of the best repellents for aerial attacks from the mosquito squadrons.

After biting a malarial patient, a mosquito must live ten days before the disease can be passed on. A repellent is one way to reduce the number of mosquitoes which have human contact after the ten-day period.

Citronella, the old standby, has the disadvantage of preventing perspiration and its odor may give away the position of troops in close jungle fighting.

Science News Letter, November 7, 1942

IN SCIENCE

PLANT PATHOLOGY

Chemical Kin of Aspirin Combat Fungus Diseases

➤ ASPIRIN'S chemical cousins have been found effective means for combating the troublesome fungi that prey upon plants known collectively as the mildews. "Aspirin" is the proprietary trade name for acetyl salicylic acid, as used for a headache remedy and general ache-and-pain alleviator. The fungus killing compounds are various salicylates, among which bismuth subsalicylate, benzyl salicylate and zinc salicylate have been found most promising when tried on blue-mold disease of tobacco, according to a communication from Dr. E. E. Clayton of the U. S. Department of Agriculture in *Science* (Oct. 16)

Discovery of the fungicidal value of these compounds was due to the war-caused shortage in copper salts, hitherto used in sprays for holding mildew and related diseases in check. The salicylates were found to be actually superior to the copper compounds for which they were supposed to be only substitutes.

Science News Letter, November 7, 1942

ENTOMOLOGY

Cockroaches Killed by Touch of Poison

➤ AN INSECT poison that kills cockroaches if it touches the outside of their bodies, though they can swallow it without harm, is described (*Science*, Oct. 23) by John W. Zukel of Iowa State College. The compound is phenothiazine, which has been under test for some time as a promising fungicide and killer of parasitic worms as well as an insecticide. It also has some uses in human medicine.

When it touches the outside of the cockroach's shell, phenothiazine passes through and is apparently converted into another compound, known as a conjugate of thionol, which is what really does the killing job.

Size of the particles of phenothiazine seems to have much to do with its fatal effect. The finer the particles, the smaller the size of the deadly dose needed.

Science News Letter, November 7, 1942

NE FIELDS

INVENTION

Bacteria Are Used To Find Petroleum

➤ GEOMICROBIOLOGICAL prospecting—that's what the inventor calls his method of putting microbes to work tracking down oil deposits.

Here is how this newly patented method works: A hole several feet deep is dug in the ground and a vessel containing a culture of bacteria is suspended near the bottom. The top of the hole is plugged and the bacteria are left there for a period of time which may amount to several weeks. Then they are hauled up, taken to the laboratory, and examined for the effects of soil gases, particularly on the rate of growth.

When oil is present deep down in the earth, certain heavy hydrocarbon gases percolate to the surface. Much research was necessary to find bacteria that would be strongly affected by these particular gases. *Bacterium alliphaticum liquefaciens* was found the most suitable. This method is like the device of using a canary to detect poison gases in World War I. Only it is a little more complicated.

Science News Letter, November 7, 1942

PUBLIC HEALTH

Syphilitic Heart Incidence Is "Appallingly High"

➤ THE DANGER of failing to treat rheumatic fever and syphilis adequately in young patients shows up strikingly in middle-aged heart patients coming to clinics, Dr. Bernard Schwartz of Cincinnati warned at the meeting of the American Public Health Association in St. Louis.

The number of patients with syphilitic heart and blood vessel disease is "appallingly high, because of interrupted or neglected early anti-syphilitic therapy," Dr. Schwartz declared. In the 1,500 middle-aged clinic heart patients he studied over a period of 15 years, 350 had this form of heart disease.

Arsenicals for treatment were well tolerated even in far-advanced cases, he said, pointing out that this gives reassurance to the practicing physician who was too conservative in the treatment of even the slightest syphilitic heart involvement.

The tragedy of the 150 middle-aged patients with rheumatic heart disease was that no one recognized the importance of vocational guidance for these patients when they were young. Nearly all of them, consequently, were unskilled workers, totally disabled in middle age for heavy work and yet untrained for semi-skilled work. As a result of the findings in this group, Dr. Schwartz reported, rheumatic fever and its complications has been made a reportable disease in Cincinnati.

Of the 1,500 patients, 300 had degenerative heart diseases. Disease of the heart's blood vessels such as angina pectoris, so frequent in the middle and upper economic groups, was infrequent among the clinic patients.

In 700 patients no organic heart disease was found, although they had symptoms referable to the heart. Some had neuro-circulatory asthenia or soldier's heart, some thyroid trouble and some obesity.

Science News Letter, November 7, 1942

EDUCATION

Manual Training Directed To Helping Army and Navy

➤ PRIOR to America's entry into the war, manual training teachers in our public and private schools taught students how to make tie-racks, book ends and waste paper baskets. Here and there, more advanced workers made desks, tables or even row boats.

Then came the requests from the U. S. Army and Navy for thousands of small, solid scale models of airplanes which were to be used for education and identification purposes. The Navy program was administered through the school systems. The Army program called upon volunteer workers to apply their model making skills to the production of needed wooden miniatures.

Overnight, manual training in the school systems was transformed from the making of gadgets to the building of units vitally helpful toward America's war effort. Even hobbyists, who once "toyed" with building flying models, suddenly discovered that their skills were in demand. Our air forces needed them as flyers or instructors; others not available for military service modified their home workshop programs to fit into the model building program.

Science News Letter, November 7, 1942

INVENTION

Device Prevents Enemy From Jamming Wireless

➤ A METHOD of sending secret wireless messages that cannot be jammed by the enemy is described in U. S. patent 2,298,562. The inventor is Francois Charles Pierre Henroteau of Ottawa, Canada.

Jamming wireless signals or a radio program is quite easy. All the malevolent spirit has to do is to send out a wave of precisely the same frequency as that on which the message is being sent, and howls and whistles in the receivers make it unintelligible. This can be done, the inventor states, with any of the secret message systems so far proposed except those using ultra-high frequency, and these are not of great value because of their short range.

His method of avoiding jam and still maintaining secrecy is to distort the sending wave by means of what he calls a key plate, which varies the frequency of the wave in an irregular way according to a pattern on the plate. A similar key plate at the receiving end removes the distortion. If an enemy should happen to find out the pattern being used, the key plates can be changed.

The sending wave cannot be jammed in this system because the enemy would have to vary the frequency of his wave in precisely the same way.

Science News Letter, November 7, 1942

NUTRITION

Boiling Fresh Yeast Increases Available Vitamin

➤ IF YOU are taking fresh yeast as a means of getting extra vitamins into your system, boil it before you eat it.

The human body apparently can extract two or three times as much thiamin or vitamin B_1 from boiled yeast as from fresh, Dr. Helen Parsons, of the University of Wisconsin, announced at the meeting of the American Dietetic Association in Detroit.

Boiling the yeast, though troublesome and likely to make it less palatable, also increases the amount of two other B vitamins (riboflavin and vitamin G) the body can get from the yeast. Dr. Parsons' pronouncements on boiled vs. fresh yeast were based on experiments with ten students and with laboratory animals.

Don't, however, boil the yeast for bread making, she cautioned. Boiled yeast cannot make bread rise.

Science News Letter, November 7, 1942

AGRICULTURE

Plowing Goes Underground

New method revolutionizes American farming, leaving stubble standing to reduce wind and water erosion; more victory food and fiber will be produced.

By GLENN SONNEDECKER

➤ WITH THE STEADY PLOD of the man with the plow, subsurface tillage is forging out of the Northwest, spreading through the Great Plains, down into the Piedmont district. It is revolutionizing much of American agriculture as surely as the blitz and panzer have changed our concepts of war.

The modern Army still "marches on its stomach" and America may well beat the outmoded sword into a plowshare, for the new tillage method means more food—fuel for fighters, sustenance for civilians.

An increasing number of progressive plowmen no longer smell the dank odor of fresh soil; nor see the long furrows of upturned sod. Old-timer shakes his head sadly, for to the unfamiliar eye subsurface tillage just looks like bad workmanship.

The new plows let the trash and stubble remain on top of the ground. Odd-shaped blades cut through the soil without turning it over. To plow under this residue was thought to be the main objective by many farmers. Now the land looks as if it wasn't even plowed at all. Face of the farm looks stubbly, grubby—like the face of an unshaven man.

Results Count

Old-timer shakes his head obstinately—until he sees results. That's what counts. Winds sweeping out of the West do not blow away the fertile top soil, as happened in the past. Disastrous "dust bowls" are much less likely to occur.

Rain, beneficent but often a bane, no longer erodes the soil, reduces the crop, or makes the land sterile. Stubble left standing by subsurface tillage anchors the ground in its place. It keeps the surface loose and open so the water sinks into the field to be stored for the dry days to come.

On an ordinary plowed field the pelting of the rain soon compacts the top surface of the fresh soil so that the rain runs away. It is not only wasted, but takes the top soil with it, resulting in erosion.

More American fields are being subsurface plowed this fall than ever before. This winter the earth will pull the white blanket more closely about her. Crop residues will catch and hold the snow until it melts, reduce the eroding runoff, and keep the moisture stored below to help boost the young food plants skyward.

Controlling insect pests is another function of subsurface tillage. Just how effective it is, remains an open question. The answer must await further experimentation, Gordon K. Zimmerman, of the U. S. Department of Agriculture, explains.

Very effective control of saw flies is reported by C. S. Noble, Canadian pioneer of subsurface tillage. The grubs are raised and left in a more exposed position, he reports. Tests show that a large percentage of them do not survive.

Grasshoppers can be controlled by leaving a strip of land unbladed. These are traps. Grasshoppers lay their eggs in the nearest firm soil. Then late in the fall, and again early in the spring, the trap strips are lightly cultivated. This destroys nearly all 'hopper eggs, Mr. Noble declares.

Disadvantages of the subsurface method are few. Experiments indicate that nitrogen in the soil, necessary to crop growth, is often not used properly under the new conditions.

Rotting of stubble is not as good as when turned under by the old method.

More effort may be required to control weeds. This is especially true during an unusually wet year. Manufacturers of the subsurface implements are improving a blade-weeder attachment, however, which controls weeds by shearing the root systems, yet leaves the stubble erect with a minimum disturbance of surface soil.

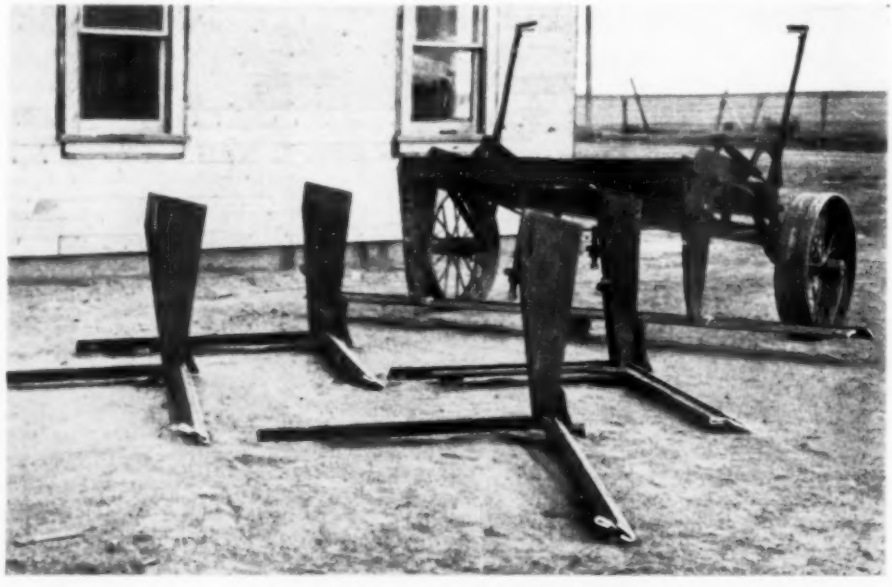
Other research is being conducted by the Soil Conservation Service.

Experiments Are Conclusive

Experiments at the University of Nebraska have conclusively demonstrated that crop residues protect the soil against high runoff or excessive erosion by wind or water, and slow down evaporation.

As the studies at the Nebraska station and those at other experiment stations progress, and as farmers have more experience with methods of utilizing crop residues, the practical nature of these methods and their adaptation to different sections will be established.

Subsurface tillage was unknown to American farmers until the last few years. Its use is now fairly common in



SEVERAL TYPES of implements are used. The straight blade attachment at the rear is used to till the soil. Those in front are cultivator and weed sweeps.

SUBSURFACE TILLAGE on the Great Plains leaves crop residues on top to protect top soil from being swept away by wind and rain. Besides higher yield, the new method will help prevent tragedies of erosion such as occurred during the all-out effort to produce food and fiber during the last war. See illustration on the front cover of this week's SCIENCE NEWS LETTER.

the Northwest and Great Plains, Mr. Zimmerman points out, and is especially helpful in areas plagued by erosion. Subsurface tillage will become more and more valuable in the Piedmont region also, Mr. Zimmerman predicts.

It is expected that a very large part of the country will eventually adopt the new method. Slowest development will probably be in the Eastern corn belt, authorities believe.

Much work has been done, particularly in the West, to develop satisfactory farm implements for the new type of cultivation. The soil must be thoroughly worked, all plant residue evenly distributed on top of the soil.

One tiller runs a wide shallow blade, mole-like, beneath the surface with only the stem-like shaft breaking the soil.

Variations range to a modification of the duck-foot shovel, with the wings lengthened and mounted so that the cuts overlap.

Duck-Foot Shovel

The old rod weeder has come out in a new guise with a modified duck-foot shovel that rides in front of the rod. This is good for use in hard ground.

If the ground is too loose to make a good seedbed, the soil must be packed a little. A rotary hoe with the wheels reversed does this job satisfactorily without burying the straw or dragging it into bunches.

The ordinary moldboard plow can be converted to a stubble-mulch tillage implement by merely removing the moldboard. The plow will then lift and break the soil without turning it over.

Ordinary implements may be used to plant the fields but surface trash often causes trouble. Several new types of drills have been tested. One of the most successful has flat disks set at a slight angle and a wing attached to each shoe to brush the residue aside until the wheel passes. This plants the grain in a clean furrow but leaves the residues on the surface between rows.

Cultivate with Sweeps

Similar disk furrow-openers are attached to corn planters. Farmers cultivate with large sweeps attached to the cultivator, again leaving the residues spread over the surface throughout the season to increase water intake and reduce erosion.

Adequate supply of implements may be curtailed, as need for war materials cuts down manufacture. Some farmers have rigged home-made apparatus. In any case, it is probable that these principles and practices will play an increasingly important part in boosting the production of food and fiber that is needed to insure victory.

If the West, both in the United States and Canada, passes through the present stress of war production without developing a new Dust Bowl, subsurface tillage can claim a considerable share of the credit.

This "earthworm method" of loosening the soil also produces bigger yields. Five more bushels of wheat per acre from a test field were reported by Edmund Heying of South Dakota, with easier handling of the soil.

Results are due to ease of root penetration and more available moisture.

At the soil and water conservation experiment station at Clarinda, Iowa, over half of the rainfall was stored in soil that was surfaced with two tons of straw per acre, and tilled by subsurface methods. Under ordinary summer fallow, where the turned sod lies bare to store moisture, only a fifth of the rainfall was retained.

Implements Being Improved

C. S. Noble, one of the founders of the new system, is continually improving his implements. This year's models, he predicts, will do the job better with less draft and upkeep. The machines are also being designed in various sizes and types to give the best efficiency under varying conditions and soils.

In the Pacific Northwest, for example, a rough cloddy condition of the surface gives best protection. Modification of tillage implements produce these clods and bring them to the top while all residues still remain on the surface.

Stubble left in an upright position is believed best on the Great Plains where blow hazard is the main problem and it is desirable to collect and hold the snows.

"With the gradual adoption of the trash cover and subsurface tillage in this area," Mr. Noble reports from Alberta, "our whole conception of scientifically correct tillage methods is being transformed.

"We no longer cultivate with weed control as the only consideration. We cultivate now—or defer cultivation—to

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control insect pests as well as weeds, and in cultivation we avoid turning the soil over to dry out, or covering its natural protection against erosion.

"It is much more than a new method of cultivation or of soil conservation we are adopting," he concludes. "It is from top to bottom a new system of dry land farming."

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PUBLIC HEALTH

War on Venereal Ills

U. S. Public Health Service plans all-out attack on menace to war effort. Federal quarantine areas will be established if it becomes necessary.

➤ THE U. S. Public Health Service is preparing to go to the extreme limits of its authority in all-out war on venereal disease which threatens to sabotage our war effort by its inroads among the armed forces and the army of war industry workers.

Establishment of Federal quarantine areas has even been discussed, but officials are hoping this last resort will not be necessary. Instead they are going into immediate action on an alternate plan calling for State health department cooperation. First steps under this plan include:

1. Appointment of Dr. Udo J. Wile, professor of dermatology and syphilology at the University of Michigan Medical School, as medical director in the U. S. Public Health Service Reserve, to inaugurate and direct clinical work in an intensified drive on syphilis. Dr. Wile has just been released by the University of Michigan for this public service.

2. Establishment in critical war areas of perhaps 25 State-Federal quarantine hospitals for segregation and treatment of prostitutes and other recalcitrant persons capable of spreading syphilis. The Federal health service will staff and operate these hospitals, under Dr. Wile's direction, with State health departments taking responsibility for rounding up and sending the prostitutes or others spreading syphilis. The Federal health service presumably will also find the hospitals and make them available to States lacking such facilities. CCC camps, it is thought, might be made available for this purpose.

3. Recruitment and training of 25 doctors, 60 nurses and 20 or more record analysts under Dr. Wile's direction. The first training course of six weeks is to start Nov. 15 at Ann Arbor, Mich. The doctors will get additional training in Detroit and the nurses at Cook County Hospital, Chicago. As more hospitals are set up, more doctors, nurses and analysts will be trained to staff them.

Intensive methods of treating syphilis, which apparently cure the patient in a few days or weeks, instead of the 18 months required by earlier programs, will be used in all quarantine hospitals. Part of Dr. Wile's job and the jobs of the newly-trained record analysts will be to determine which of these various quick treatments are most efficient and economical. So far most of them have only been used on small groups of patients and their effectiveness and safety need further evaluation.

The one-day combined chemical and fever treatment for syphilis developed by Dr. H. Worley Kendell and associates of Dayton, Ohio, is already being given a thorough trial under Federal-local health department cooperation at Wesley Hospital, Chicago. Dr. Kendell is in charge of the treatments there. This hospital, however, is not one of the quarantine hospitals, most of its patients coming voluntarily.

The record analysts, besides keeping records for evaluation of the new treatment methods, will also take charge of vocational guidance of the prostitutes after treatment and release. Long-time social and personality rehabilitation of the prostitutes may be undertaken later, but the present plan calls for job placement only. As one public health service worker put it, the idea is to "clean them up and get them jobs."

Science News Letter, November 7, 1942

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● RADIO

Saturday, November 14, 1:30 p.m., EWT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

D. W. Kaufman, chief chemical engineer of the International Salt Company, will discuss salt and describe its uses in war industries.

Tuesday, November 10, 7:30 p.m., EWT

Science Clubs of America programs over WRUL, Boston, on 6.04, 9.70 and 11.73 megacycles.

One in a series of regular periods, over this short wave station to serve science clubs, particularly in the high schools, throughout the Americas. Have your science group listen in at this time.

Monday, November 9, 9:15 a.m., EWT; 2:30 p.m., CWT; 9:30 a.m., MWT; and 1:30 p.m., PWT

Science at Work, School of the Air of the Americas over the Columbia Broadcasting System, presented in cooperation with the National Education Association, Science Service and Science Clubs of America.

"Communications" will be the subject of the program.

GENERAL SCIENCE

German and Other Enemy Books To Be Republished

➤ SCIENTIFIC books of enemy origin will be made available for America's war and educational effort through the cooperation of the Office of Alien Property Custodian whenever there is a real need for them, according to plans now underway.

Through republication by any appropriate means, including photolithography, and microfilm, it is hoped to supply any research worker or library needing fundamental scientific treatises usually obtained from German or other enemy publishers.

The Alien Property Custodian has asked the cooperation of the American Documentation Institute, Science Service and other scientific organizations in obtaining information on what books of enemy origin should be made available under this new plan.

Research scientists, laboratories and libraries are requested to send suggestions as to books needed directly to the Alien Property Custodian, National Press Building, Washington, D. C.

Science News Letter, November 7, 1942

The browning or *rusting* of evergreens so apparent at this season of the year is nature's way of pruning these trees, and is not due to insects or disease.

PUBLIC HEALTH

Sanitary Privies May Help Solve Polio Problem

➤ SANITARY PIT PRIVIES in rural areas, often objects of humor, may nevertheless help solve the problem of how to stop the spread of infantile paralysis, Roy N. Johnston, associate engineer of the Kansas State Board of Health, declared.

"There is much evidence to show that this dreadful disease may be borne by water, food or the fly," Mr. Johnston pointed out. "In Kansas I have observed that where poliomyelitis (infantile paralysis) has occurred it is usually in areas where sanitary conditions were unsatisfactory. It has been observed by the Public Health Laboratories in Kansas that in seeking blood for the preparation of convalescent serum for poliomyelitis, most of the donors lived in sub-standard environments."

He challenged sanitary engineers to find the answer to the question whether complete coverage of rural areas with sanitary privies would influence the control of infantile paralysis. He added that so far as he could determine there "is not a state epidemiologist or sanitary engineer who has carried on any worthwhile studies of this disease."

Whether sanitary privies would help solve the polio problem or not, their construction in rural and urban communities is one method of reducing the amount of intestinal disease, Mr. Johnston declared. A state program for privy construction, begun in Kansas in 1933, besides its direct effect in reducing disease stimulated tremendous community interest in other phases of health work, such as rat control, safe drinking water, screening, and proper hygienic surroundings for rural schools.

Many of the engineers who took part in the program advanced professionally to higher positions as a result of this experience.

The program in Kansas was part of a larger program sponsored by the U. S. Public Health Service under which more than 3,000,000 sanitary outdoor toilets were constructed by State health departments in cooperation with the Federal relief agencies. This Public Health Service sponsored program was really an outgrowth of the much earlier hookworm eradication campaign for which the Federal health service first advocated pit privy construction.

To work on this earlier campaign the U. S. Public Health Service sent many young officers who have since become outstanding in public health, among them the present Surgeon General, Dr. Thomas Parran.

Science News Letter, November 7, 1942

INVENTION

Plastic Slide Fastener Improved; Uses No Metal

➤ THE FAMILIAR metallic slide fastener, we have often been told, will soon be out for the duration. But Germany seems to have been in this condition for some time past. A patent for a completely non-metallic or plastic slide fastener was applied for in this country July 1, 1939, by Julius Pueschner and Joseph Pueschner, of Sudetengau, (according to the Nazis) in Germany. Patent was applied for July 14, 1938, in Czechslovakia. U. S. patent 2,297,245 was awarded to them and is assigned to the Alien Property Custodian.

Yet the inventors claim only improvements, in construction and manufacture, over previous non-metallic slide fasteners.

Science News Letter, November 7, 1942

THE ARMY-NAVY "E" Flag awarded to Bausch & Lomb recently for continuous achievement in production for Victory is the third in a series of "E" awards. Previous awards included the original Navy "E" and the All-Navy "E" Burgee with star.

"Eyes Right" Has Never Meant So Much To America

EVERY job in Production for Victory calls for top visual efficiency. This means that eyes must function unfailingly and unflinchingly—at lathe, bench and on assembly line, in research and control laboratory, over drafting board and foundry flask.

Upon the skill and training of the nation's thousands of eyesight specialists rests the responsibility of forestalling eyestrain as an unconscious saboteur.

As a maker of ophthalmic products—the instruments used in the scientific examination of the human eye, the spectacle lenses and frames which these specialists use—Bausch & Lomb has an important part in America's war effort.

In the development and manufacture of actual fighting equipment, such as rangefinders, aerial height finders, binoculars, aerial map-making equipment, Bausch & Lomb is serving the Armed Forces directly. At the same time, Bausch & Lomb is providing the metallographic equipment, the microscopes, spectrographs, contour measuring projectors, optical glass and special instruments required by other manufacturers in filling military needs.

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First Glances at New Books

➤ NAVAL INFORMATION, never too easy to get from some powers, becomes a trebly guarded secret in time of war. Yet the editors of JANE'S FIGHTING SHIPS, 1941 edition (*Macmillan*, $19), have contrived to collect a considerable amount of data about the navies of our enemies as well as those of our allies and neutral nations, which makes exceedingly interesting reading in these exciting days. They carefully and honestly differentiate between solidly authenticated figures and those believed to be correct but not yet confirmed. There are also notes on losses and damage up to date of publication.

Science News Letter, November 7, 1942

➤ THE CONVERSION of secondary school education to war production has produced a sudden revision in teaching methods. THE AIR WE LIVE IN, by G. T. Renner, and Hubert A. Bauer, 36c; THE BIOLOGY OF FLIGHT, by Frederick L. Fitzpatrick and Karl A. Stiles, 64c; EDUCATION FOR THE AIR AGE (A Guide for Teachers and Administrators), by N. L. Engelhardt, Jr., 24c; ELEMENTS OF PRE-FLIGHT AERONAUTICS FOR HIGH SCHOOLS, by Aviation Research Group, Teachers College, Univ. of Nebraska, 96c; FLYING HIGH, by Rose N. Cohen, 76c; GEOGRAPHIC EDUCATION FOR THE AIR AGE (A Guide for Teachers and Administrators), by George T. Renner, 20c; GLOBES, MAPS, AND SKYWAYS, by Hubert A. Bauer, 40c; HUMAN GEOGRAPHY IN THE AIR AGE, by George T. Renner, 64c; SOCIAL STUDIES FOR THE AIR AGE, by Hall Bartlett, 60c; TEACHERS MANUAL FOR THE BIOLOGY OF FLIGHT, by Frederick L. Fitzpatrick and Karl A. Stiles, 20c; WINGS FOR YOU, by E. A. Cross, 76c. These books, all a part of the AIR-AGE EDUCATION SERIES (*Macmillan*), link with pre-flight training many of the ordinary high school subjects such as biology, and geography as well as some not previously taught. They are prepared under the auspices of the Institute of Aeronautical Sciences with the co-operation of the Civil Aeronautics Administration.

Science News Letter, November 7, 1942

➤ AUTHENTIC INFORMATION on tuberculosis written and illustrated in a highly original and humorous style is this book, THE LIVES AND LOVES OF HUBER THE TUBER, by Harry A. Wilmer (*National Tuberculosis Association*, $1). For laughs and for tuberculosis-fighting knowledge, both so badly needed in a world at war, this is a must book for everyone.

Science News Letter, November 7, 1942

➤ THE RESPONSIBILITY of science teachers in preparing our children for "the adventure which is both old and new, the building up of a new world order based on freedom and on love" is stressed by British writers, S. R. Humby and E. J. F. James in SCIENCE AND EDUCATION (*Cambridge University Press*, $1.25). The use to which scientific knowledge is put should not be left to chance or the dictates of self-interest, they believe, but should be determined by a new viewpoint developed through education.

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• Just Off the Press •

THE AGE OF EXPLORATION — Margaret R. Scherer — *Metropolitan Museum of Art*, 36 p., illus., 50c. Pictures of explorers, places of exploration, and of the rulers responsible for the expeditions.

ALCOHOL ADDICTION AND CHRONIC ALCOHOLISM (vol. I)—E. M. Jellinek—*Yale Univ. Press*, 336 p., $4.

AMERICAN SILVICS AND SILVICULTURE — Edward G. Cheyney — *Univ. of Minn. Press*, 472 p., illus., $5.00.

APPLIED MICROBIOLOGY AND PATHOLOGY—Thurman B. Rice—*Macmillan*, 271 p., illus., $3.00; 2d edition of "Applied Bacteriology."

BIRDS AT HOME—Marguerite Henry—*Donohue*, 88 p., illus., $1.25. For children, with twelve color illustrations by Jacob Bate Abbot.

CHANGES IN THE KNEE JOINT AT VARIOUS AGES—Granville A. Bennett and others—*Commonwealth Fund*, 97 p., illus., $2.50. 31 plates. Technical.

THE CHINLEE RUG—H. P. Mera—*Laboratory of Anthropology*, 13 p., illus., 25c. A pamphlet concerned with Navajo weaving.

FISHES OF WESTERN SOUTH AMERICA—Carl H. Eigenmann and William Ray Allen—*Univ. of Kentucky*, 494 p., illus., tables, diagr., $5.

GETTING ACQUAINTED WITH CHEMISTRY—Alfred Morgan — *Appleton-Century Co.*, 271 p., $2.50.

HOSPITAL DISCHARGE STUDY (vol. I) — Neva R. Deardorff and Marta Fraenkel—*Welfare Council of New York City*, 209 p., $1, vol. I; subscription to 3 vols., $2. Interesting to health, medical and welfare authorities.

A LABORATORY OUTLINE OF HUMAN ANATOMY—Beryl Iles Burns—*Louisiana State Univ.*, 409 p., $3.50. Technical, for medical students at Louisiana State University School of Medicine.

THE LADY AND THE LIONS—Bess Kennedy —*Whittlesey*, 221 p., illus., $2.50. Written by a worker in the U. S. Biological Survey, who traps and shoots animals that prey on the sheep and cattle of the Southwest.

LET'S INVESTIGATE—Alfred H. Hausrath, Jr. and John H. Harms—*Macmillan*, 154 p., 80c. "An experimental approach to consumer science."

THE LIVES AND LOVES OF HUBER THE TUBER—Harry A. Wilmer—*Nat'l Tuberculosis Association*, 83 p., illus., $1.

MICROBIOLOGY AND PATHOLOGY FOR NURSES—Mary Elizabeth Morse, Martin Frobisher and Coleman B. Rabin—*Saunders*, 575 p., illus., tables, diagr., $3.25.

NEW COMMERCIAL AND TECHNICAL DICTIONARY—Antonio P. Guerrero—*Chemical Pub. Co.*, 600 p., $10. This new dictionary of Spanish-English and English-Spanish technical and commercial words has been compiled to set up a standard for these words. It contains also conversion tables of weights, measures and monetary units.

NEW UPPER CAMBRIAN TRILOBITES — Charles E. Resser — *Smithsonian Institution*, 136 p., illus., 85c.

PATENTS FOR HITLER—Guenther Reimann —*Vanguard*, 316 p., $2.50.

A REVIEW OF ARITHMETIC—Zens L. Smith —*The Institute of Military Studies*, 37 p., 25c. Prepared for students who wish to retrain themselves in arithmetic. Useful for those contemplating pre-induction courses, in which rapidity and accuracy in calculations are emphasized.

SEMIMICRO AND MACRO ORGANIC CHEMISTRY—Nicholas D. Cheronis—*Thomas Y. Crowell Co.*, 388 p., illus., $2.75. A laboratory manual.

TABLES OF FOOD VALUE—Alice V. Bradley —*Manual Arts Press*, 224 p., $3.50. Revised and enlarged edition. Useful for dietitians and laymen.

TENTS IN THE WILDERNESS—Julius E. Lips —*Stokes*, 297 p., illus., $2.25. The story of a Labrador Indian boy for young readers.

WARTIME FOOD DEVELOPMENTS IN GERMANY—Helen C. Farnsworth—*Food Research Institute, Stanford Univ. Press*, 36 p., 25c.

WILLARD GIBBS: AMERICAN GENIUS—Muriel Rukeyser—*Doubleday, Doran*, 465 p., $3.50.

WILLIAM JAMES—A. A. Roback—*Sci-Art Publishers*, 336 p., $3.50. Biography of a great psychologist, written by a psychologist.

WITHOUT FAME — Otto Eisenschiml — *Alliance Book Corp.*, 368 p., $3.50. "The romance of a profession." An autobiography of a Viennese-born American chemist, who is also an author and lecturer.

YOU, YOUR CHILDREN AND WAR—Dorothy W. Baruch—*Appleton-Century*, 234 p., illus., $2.00. Advice to parents.

MEDICINE

Clinical Congress Latest Convention War Casualty

➤ LATEST among big annual conventions that have become casualties of war is the clinical congress of the American College of Surgeons. Already postponed from sometime in October to Nov. 17, and moved to Cleveland from Chicago when the U. S. Army Air Corps took over the selected convention hotel in Chicago, the meeting has now been cancelled.

Patriotically, the Board of Regents voted to cancel the meeting in order not to interfere with the successful prosecution of the war by taking surgeons temporarily away from their civilian duties, embarrassing the transportation system, and interrupting the work of the medical profession in Cleveland by preparations incident to such a meeting.

Science News Letter, November 7, 1942

SAFETY

Increasing Accidents Due To Inexperienced Workers

➤ THE SWELLING tide of farm accidents due to inexperienced men, women and children working to produce the food for freedom, calls for an augmented safety program, Kirk Fox, editor of *Successful Farming*, declared at the meeting of the National Safety Council in Chicago.

At present there are more accidental deaths on the farm than in any other industry. Some 4,500 farm people are killed annually. The number of serious injuries likewise runs extremely high, Mr. Fox pointed out.

Farm organizations and machinery manufacturers are doing much to reduce this toll. But from facts presented by Mr. Fox, it would seem that danger to inexperienced workers, especially those from the cities, could be greatly reduced in two ways. First, the worker must learn safety measures and a respect for the machinery he must handle. Second, a gradual physical toughening program would reduce injuries due to fatigue and strain to which the new farm worker bows long before the seasoned farmer.

Science News Letter, November 7, 1942

An electric *detector*, invented in England, prevents damage to saws by "finding" metal nails or bolts hidden in timber.

• New Machines and Gadgets •

⚙ *A BALL-BEARING SCREW is a curious novelty for which a patent has recently been granted. It is adapted to heavy screw jacks and the like, greatly reducing the force necessary to turn the screw. The threads are hollow grooves, and so are those of the nut in which the screw turns. The balls roll in these grooves. But as the screw advances the balls would roll out of one end, so they are returned to the other end by a passage through the nut.*

Science News Letter, November 7, 1942

⚙ *TO PREVENT THEFT of tire or wheel from a motor vehicle, a recent patented invention provides a metallic strap, fastened at one end to the wheel disk, passing over the hub cap, and fastened at the other end to the disk by means of a lock. This prevents a thief from removing the cap to get at the wheel bolts. A cup at the locking end covers the valve stem, thus preventing him from deflating the tire to remove it. Where there is no hub cap, a straight strap is used which will make at least two of the wheel bolts inaccessible.*

Science News Letter, November 7, 1942

⚙ *A NEW ELECTRIC water light which eliminates the menace of an open flame on an oily sea will be welcome to the seamen of sinking ships. The new light, cylindrical in shape, lights up automatically on striking the water. A weighted base keeps it floating upright. It will burn for ten hours or more. The casing and dome are of transparent plastic, methyl methacrylate. By use of this plastic the weight of the light has been reduced to about one-fifth that of the usual water light. It is attached by a line to the life preserver or raft.*

Science News Letter, November 7, 1942

⚙ *A "THUMB-SPRAY" attachment for fire extinguishers makes it possible to throw either a jet or a spray in case, like the rest of us, you are still in doubt which is better for an incendiary bomb. Fire extinguishers, built in the days before the controversy, are equipped only with a simple nozzle which throws a solid stream. The attachment, which readily clamps to the nozzle, enables you to choose between stream and spray. Pressure of the thumb converts from one to the other.*

Science News Letter, November 7, 1942

⚙ *THE PLASTIC SCABBARD shown in the illustration is lightening the bur-*

den of our troops throughout the world, according to reports approved by the War Department. The scabbard, though light, is strong and durable, and is said to be the best yet developed by the Army for hard service in all climates. The plastic is cellulose acetate butyrate, which is used also for bomber visors, gas mask lenses, tank and jeep parts.

Science News Letter, November 7, 1942

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, *1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 129.*

A *honeybee* carries approximately one-third of its weight in nectar.

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40 High School Seniors on the way up

FORTY HIGH SCHOOL *seniors, finalists in the nation-wide 1942 Science Talent Search, take their first step on the way up when they come to Washington for their scholarship examinations.*

TOP HONORS. *Under the eyes of some of some of the Nation's outstanding scientific figures, Marina Prajmovsky and Paul Teschan, the two grand prize winners in this year's Talent Search, receive their $2,400 Scholarship Awards.*

ESSAYS AND SCIENCE *experiments begun in high school, pay off—from here they go to college . . . do further research in big university laboratories . . . research that will build a brighter future for the world.*

Will you be in this picture next February?

Last July, 20 of these students received Westinghouse Science Talent Search Scholarships. It is highly significant, however, that all 40 of these finalists received offers of scholarships from the nation's leading colleges and universities.

Equal opportunities are open to you in the 1943 Science Talent Search, if you are a high school senior. Ask your teacher if she will enroll you in this contest. The 1943 Science Talent Search closes December 28, 1942.

The Science Talent Search is sponsored by Science Clubs of America and the Westinghouse Electric & Manufacturing Company. Its purpose is to uncover exceptional scientific ability and open the way for talented boys and girls to achieve greater usefulness.

There are two Westinghouse Grand Science Scholarships of $2,400 each and eight of $400 each, and several additional scholarships of $100 each to be awarded at the discretion of the judges. In addition, for each of the 40 finalists there is a five-day all-expense-paid trip to Washington to attend the Science Talent Institute.

Teachers may secure complete details and entry blanks by writing to Science Clubs of America, 1719 N Street, N.W., Washington, D.C.

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